INTELLECTUAL PROPERTY TOOLS, STANDARDS AND MARKET POSITIONING

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The Intellectual Property Rights (IPR) elements of the DIME Network currently focus on research in the area of patents, copyrights and related rights. DIME's IPR research is at the forefront as it addresses and debates current political and controversial IPR issues that affect businesses, nations and societies today. These issues challenge state of the art thinking and the existing analytical frameworks that dominate theoretical IPR literature in the fields of economics, management, politics, law and regulation- theory.

Intellectual Property tools, standards and market positioning

Isabelle Liotard[1]

Introduction

To an economist observing corporate strategy during this age of the emergence and development of internet and the digital economy, one thing is clear: the move towards a New Economy has heightened both the use and the strategic exploitation of intellectual property by economic players. The very particular field of research constituted by intellectual property, which draws on the scientific disciplines of economics and law as well as the field of management, has already been studied for several decades. It continues to arouse widespread curiosity now, because of the scale of the current phenomenon. Although intellectual property and its subset, industrial property, have been in existence for a very long time (the origins of patents can be traced back to the *Parte Venezzia* of fifteenth century Italy), it is only over the last twenty years that its scope and use have grown on such a massive, unprecedented scale, accompanied by an equally dramatic rise in the difficulties it provokes. During the twentieth century, the protection of inventions by patent has regularly accompanied every new phase in technological innovation[2] (Kline and Rivette, 2000). And this trend has continued recently during the explosion of internet and the digital economy, with software programmes, for example, which play an indispensable role in this domain, themselves becoming the object of patent protection.

Today, intellectual property is no longer simply a means of legally protecting inventions, as it was during previous phases of technological innovation. Now, there is more at stake than the simple concern to prevent plagiarism and pirating. This concern is now associated, at least for a certain number of economic players, with the need to go on the offensive, by introducing licensing policies or enhancing the value of immaterial assets, to hinder or even prevent rivals from operating, to establish their own specific technological standards, and so on. And this vision of intellectual property as a strategic tool cannot be attributed solely to companies. It is shared by players of a more political or institutional nature, who envisage intellectual property as a weapon of economic competitiveness.

In the first section, we shall explore the way in which political and/or institutional authorities deal with intellectual property, particularly with the aim of boosting the competitiveness of certain sectors. Developments in jurisprudence over the last twenty years, both in the United States and in Europe, show that two domains have been particularly affected by the increasing importance of patent protection: living matter and software (Kortum and Lerner, 1998). Most notably, the various American Courts of Justice and the European Patent Office (EPO) have agreed to grant patents on software. The same cannot be said, however, for another specific object: business methods. These systems, deeply involved in e-business, are perceived in different ways and accorded different levels of protection on either side of the Atlantic.

In the second section, we shall analyse industrial property as an offensive weapon in the hands of economic players. We know that it plays a crucial role in the introduction of technological standards. To the extent that certain key sectors (telecommunications,

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[2] The telegraph and electricity in the 1880s, the car and aviation industries (1900-1920), aerospace and synthetic materials in the 1960s and the high-tech boom since the 1980s were all accompanied by an intensive wave of patent registrations.

computing, software, etc.) are built around network effects and increasing returns of adoption, obtaining these returns has become the key challenge in the race to establish standards, where the winner is the one who obtains them first. Industrial property is a determinant factor in these strategies. It is interesting to investigate whether the same strategies deployed in past examples of the standards race are still used today in the context of internet and the digital economy. In particular, we shall analyse the standards war over internet browsers (Explorer and Netscape). Nearer to home, we shall give an overview of the forces present in the domain of DRM (Digital Rights Management), systems which enable the operation of legal music downloading sites. We shall also focus our attention on the effects of the unrelenting use of industrial property, in terms of innovation, competition and the sharp rise in litigation.

1) Strengthening of intellectual property, software and business methods

1.1) Why more protection for software?

The growing importance of software since the 1970s has been accompanied by reflection on the best means of protection to adopt for this technological object of an increasingly generic nature. During the 1960s and 1970s, software programmes only enjoyed limited protection. They were produced on order, for specific customers. The industry saw little need to establish high levels of protection because of the lack of compatibility between machines and programmes: this incompatibility generated its own *de facto* protection, and the implementation of legal means of appropriation was not considered. Trade secrets were the only method used to protect the source code of programmes (Graham and Mowery, 2002). But the structure of the software market has changed since the 1970s: software developed for one customer and one very specific type of machine has given way to packaged software. In this context, programmes are being used on an ever-growing number of computers. The manufacturers, motivated by the objective of selling to the greatest possible number of customers and diffusing their programmes as widely as possible, have realised that protection by means of trade secrets has become outdated and ineffective.

In the United States, for example, after passing through a stage of protection by copyright thanks to the *Computer Software Copyright Act* of 1980, the manufacturers then lobbied for intensified protection through patents. So the strengthening in protection, through intellectual property, has indeed been the result of the growth in the standardised software market. In parallel, the emergence of internet has been a crucial factor in explaining this desire to establish stronger protection for software. A channel wonderfully adapted to the instantaneous diffusion of digital works (literature, music, software programmes, etc.) without any reproduction costs, internet has heightened the urgency for software producers to respond to these dramatic changes by pushing for stronger protection.

This emphasis on intellectual property can also be interpreted as an attempted solution to the weak competitiveness of the United States at the beginning of the 1980s, a period when the country was seeking new vectors of growth in the face of heightened competition from Asia and Germany. Academic research was running out of resources, because of cuts in research funding and the priority given to balancing the federal books. This resulted in the academic world moving closer to industry which, having reduced its own research capacities, was also seeking a rapprochement with the universities. In this context, the “military” arm of the strategy was the policy of intellectual property, which gave a massive boost to academic

research on the one hand, and extended patent protection to new domains, offering new opportunities for competitiveness, on the other[3].

1.2) The legal tools used

Software has traditionally been considered as a work of authorship. As such, it has been covered by the *droit d'auteur* in Europe or by copyright in the United States. But over the last twenty years, and more particularly the last ten years, American law has been modified by numerous cases of jurisprudence, with the result that patents are assuming an ever more important role in the protection of software. This trend has also been evident in Europe, where several decisions by the European Patent Office (EPO) now offer the possibility of patenting computer programmes, but in a more restricted manner than in the United States.

In the U.S., the traditional framework of software protection by copyright has been overturned by a series of cases of jurisprudence. This movement, which has really got under way since the 1980s, has gradually led to the juridical acceptance of patent protection. This can be explained by one underlying reason: copyright protection and patent protection do not have the same scope. The creator of software protected by copyright can, if he so wishes, prohibit the reproduction of his work and limit the spread of license concessions of his copyright. The problem resides in the behaviour of his competitors (do they draw inspiration from his software to offer a similar product?) and questions relating to reverse engineering (Desrousseaux, 2000). We know that ideas are not appropriable. Only the form is protected by copyright (not the function). But as a given functionality can often be achieved through more than one way of programming, a rival who has no right, theoretically, to copy a certain programme can create a different programme (thus getting round the copyright) offering the same functionality. In this case, it is very difficult to judge on a possible infringement of copyright, especially if the competitor has used the "clean room" method[4]. And although reverse engineering is theoretically prohibited, it is actually necessary in certain situations (e.g. the development of software interfaces). In this context, it is difficult to bring the juridical framework of copyright into play to protect against the actions of a rival.
Unlike copyright, patents on software protect the functional interrelations between the technological components of the system (Skulikaris, 2001). Consequently, it is no longer the form of the software that is protected, but a series of functions (functional protection) – the result, in other words. Here, the protection provided by patents appears to be stronger than that provided by copyright.

a) Wholesale patent protection in the United States

In the United States, the decisive turning-point came in 1980 with the case *Diamond v Diehr*. Up until this date, the Supreme Court of the United States, the court of last resort for patent disputes, had systematically supported the USPTO (US Patent and Trademark Office) in its desire not to grant patents on software. With this case, on the contrary, it opened the door to the possibility of patenting software. The Supreme Court ruled that the patent claim covered

[3] Thus, from 1980 on, numerous legislative measures, based on R&D and intellectual property rights, were taken to restore American competitiveness (Orsi, 2002). The software sector, together with that of living matter, helped to recover competitiveness in the 1990s.

[4] This procedure was developed in the United States to "draw on" the rival's protected software without risking an infringement of copyright. There are two stages: (1) a first team is brought together: it analyses the rival's software and draws up the functional specification; (2) the first team leaves the room. A second team comes in (without communicating with the first team) and uses the functional specification to design the programme to be marketed.

the whole invention, not just the algorithm used to make the invention function[5]. In this case, the applicant could obtain a patent.

This watershed decision paved the way for a whole wave of subsequent decisions allowing patents on software, as long as the invention was "useful" (Liotard, 2002). In particular, it led to the *State Street v Signature* ruling of 1998 on the possibility of patenting "business methods". This term refers to a certain number of tools that can be useful in "doing business". In the United States, this term is used for many applications that are now patentable: management or financial data processing methods, computing techniques and educational, organisational, e-business, consulting, marketing or financial methods. In the field of e-business, patents have been granted for systems of e-finance, on-line bookselling and auctions (Lerner, 2000; Hall, 2003).[6]

As a result of this series of rulings and jurisprudential decisions, the number of applications for software patents, especially internet-related patents, has rocketed in the recent past (Hunt, 2001). In parallel with the overall number of patents in the United States, software-related patents have risen sharply, leading the USPTO to grant between 7,000 and 10,000 software patents, in a broad sense, per year. This figure rose to 25,000 patents per year in 2002 (Hunt and Bessen, 2004). It is interesting to note that this growth can be observed both for national and international applications (Graham and Mowery, 2002). Moreover, the companies most active in software patent applications are not packaged-software firms like Microsoft, but the twelve major players in the electronics sector[7].
As for business methods, the 1990s saw an accelerated growth in internet-related patents in this domain. Less than 100 patents of this genre were granted before 1992 (Hunt, 2001). During the next five years, the Office granted 750 internet-related patents and then, from 1998 on, the growth was astronomical. Nearly 4,000 were granted in 1999 and 5,700 in 2000, mainly to computing and telecommunications component manufacturers and software developers.

b) Prudence in Europe
Two underlying trends stand out in Europe's approach to the question of strengthening property rights in the fields of software and business methods.
Firstly, although article 52(2) (c) and article 52(3) of the European Patent Convention, signed in Munich on 5 October 1973, exclude from patentability "schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers (…) as such", the practice of the European Patent Office has been quite different. Over the last twenty years, the Office has granted patents on software programmes, as long as they meet the technical criteria required by the examiner. Following three key decisions by the Boards of Appeal of the EPO[8], a computer programme can obtain patent protection if there is a "further technical effect", whether direct or potential (Schwarz, 1997).

[5] The Court ruled that a claim could be patentable even if it used a mathematical algorithm in the process, arguing that the inventor did not claim all his rights over future uses of the mathematical equation in question, but only for the particular application he had invented.
[6] See, for example, the "one-click" system of Amazon.com
[7] IBM, Intel, HP, Motorola, National Semiconductor, NEC, Digital Equipment Corp, Compaq, Hitachi, Fujitsu, Texas Instruments, Toshiba.
[8] These decisions are: Computer-related invention / Vicom T208/84 (1987) JO EPO 14; General purpose management system / Sohei T769/92 (1995) JO EPO 525; Computer program product / IBM T 1173/97 (1999) JO EPO 10.

Today, around 30,000 software-related patents have been granted by the EPO, the majority of them dealing with digital data processing, data recognition and information representation and processing (Van Den Bulck, 2005[9]).
Although, in practice, many software patents have been granted in Europe, the prevarication we have seen over the last two years in the drafting of a directive on the subject highlights the difficulty Europeans have in reaching agreement. The shuttling back and forth of proposals between the European Parliament, the Council of Ministers and the European Commission has further complicated matters, particularly given the divergent positions on the subject of software patentability. The last text proposed by the Council of Ministers, dated March 7 2005, was submitted for a second reading in the European Parliament, which rejected it outright in July of the same year. So at present, Europe remains in the same state of affairs, where theory (the European Patent Convention) and practice (the EPO) are opposed. According to some commentators, this situation is actually worse, because the refusal to formalise EPO practice threatens the precarious existing equilibrium and encourages national jurisdictions to take more liberties in their appreciation of software patents[10].

However, Europe is far from sharing the American enthusiasm for the patenting of business methods, whether we examine French jurisprudence[11] or that emanating from the European Patent Office (Warusfel, 2001 and 2003). Although more and more applications for business method patents are submitted[12], the EPO has maintained its position on the non-patentability of business methods which lack the technical character that is a pre-requisite for the granting of any patent. This was especially clear in the Pension Benefit System case (T931/95) of September 8 2000, brought before the Technical Board of Appeal of the EPO, in which the applicant was seeking a patent on a method of controlling a pension benefit system. According to the Board, not only did the process have no technical character, but it also resulted in no technical objective or effect.

2) Offensive intellectual property strategies

2.1) Intellectual property and technological standardisation

Observation of the Information and Communication Technologies sectors shows that the phenomenon of technological standardisation is not only frequent, but essential to the development of such activities. These sectors are subject to powerful network effects and increasing returns of adoption (Katz and Shapiro, 1985; Arthur, 1989; Varian and Shapiro, 1998; Stango, 2004). The size of the community of users, the rhythm and dynamic of adoption of one or another technology by these users, the fateful moment when one company attains the critical mass of consumers which will enable it to break through the absorbing barriers and win, all these elements are brought into play by certain companies in striving to reach the ultimate objective: to win the race to establish standards (where the winner takes all)

[9] "*Le Conseil Européen passe outre la volonté du Parlement et adopte la position commune sur la brevetabilité des logiciels*", actualité of 7 March 2005 http://www.droit-technologie.org.
[10] The consultation initiated by the European Commission in January 2006 has revived the debate on software patenting, in a broader context (that of Community Patents).
[11] See the decision of the Court of Appeal of Paris of January 10 2003 in the case Sagem versus INPI or the decision of the Court of Appeal of Rennes of October 7 2003 in the *Antonietti* case.
[12] Business methods are categorised in the class G06F17/60 in Europe. Notable examples include an application for a system to monitor the financial parameters of a stock market (application FR 2.765.368) or a home-financing system comprising an income-based mortgage (application FR 2.669.449).

by capturing these club effects[13] and then, of course, to issue licenses to competitors in the sector. Literature on this subject has been abundant, analysing a certain number of examples of standards wars, or at least the establishment of standards in different domains (the Qwerty keyboard, video cassette recorders, personal computers, etc.). It has also studied system goods, where the concept of standards takes on its full significance (Economides, 1996).

One of the means to attain this objective is the strategic use of intellectual property. Many past examples demonstrate the range of possible strategies. The aim is to ensure one's own technology wins the standards race, whether these are *de facto* or *de jure* standards, and then either to rally other producers to these standards or, in the most extreme cases, to prevent rivals from using them and so remain the sole supplier (Bekkers and Liotard, 1999; Dolmans, 1998; Liotard, 2000; Blind and Thumm, 2004). In fact, a company developing a technology has two options: either to adopt a relatively open standards policy, by issuing numerous (inexpensive) licenses, or to adopt a closed strategy, restricting licenses to use the technology (by asking a high price or through the strict selection of licensees)[14]. This choice is far from trivial, for it is emblematic of two alternative strategies: maximising volumes and thus market share or maximising rent (Gabel, 1991). These choices contribute to the strategic positioning of the firm in the "market for standards" (Grindley, 1995): either an open or a closed license strategy may be the winning one, depending on the "product". Examples abound. Sony with the VCR and Apple with its computer both chose closed, proprietary strategies: this worked for Apple but not for Sony. JVC and IBM, on the other hand, chose open license strategies for their respective standards (VCR and computer); this proved to be a successful choice in both cases (Besen and Saloner, 1989).

The arrival of internet at the beginning of the 1990s gave a big boost to new technologies and their development. Since then, the digital economy and its internet showcase have transformed means of production, consumption and working. Here, it is worth exploring the question of whether these changes have also modified corporate strategies towards establishing standards, and whether or ont intellectual property is being put to new uses in this context.

The underlying idea is based on this point: fundamentally, the intellectual property strategies deployed by firms in their search to establish standards have not changed with the advent of new digital technologies. What has changed, we believe, is the speed of diffusion of new technologies and the particular size of the market, which, with internet, instantly becomes a global market. Two examples provide clear illustrations of this: the standards war over Web browsers and the current war over DRM.

a) The standards war and Web browsers: intellectual property and incompatibility

Much of interest can be drawn from an analysis of the war between internet navigation systems (Windrum, 2004), or rather the wars, because there were two of them. The first was between Netscape and Mosaic, the first ever navigation system; the second was between Netscape and Microsoft. Analysing the reasons behind Netscape's success in the first war and Microsoft's success in the second, we can see that, far from being the key element in the winning strategy, intellectual property was simply one of several factors. Two features contributed to Netscape's victory in the years 1994 – 1995: firstly, the quality of its browser,

[13] This involves using an installed base of customers of a technology to create a bandwagon effect so as to generate path dependency and reinforcing effects.

[14] Note, however, that a continuum of possible strategies, partially open or partially closed, exists between these two extremes.

easier and more user-friendly than its rival; secondly, Netscape's innovative commercial strategy of signing agreements with other software companies and adopting an aggressive pricing policy[15]. Although, of course, the extensions added to each new version of Navigator were proprietary, we cannot speak of a veritable "property" strategy here.
Likewise, in the Microsoft – Netscape conflict, other levers played a crucial role in the success of Explorer. Microsoft, which launched the war in 1995-1996, didn't rely on either the technological superiority of its system or an innovative pricing policy (it used the same commercial techniques as Netscape). Microsoft's strategy was based on generating incompatibility with Navigator and included the addition of proprietary extensions, with each new version, which prevented Navigator from reading Web pages written using Explorer. This strategy, relying on the idea that Web page editors only use one format, to keep costs down, was combined with a series of agreements with editors and internet providers and, of course, the tremendous springboard provided by the Windows installed base. The consequent troubles of Netscape are common knowledge.
Intellectual property played a more important role in Microsoft's approach, as it was exploited by the company to heighten the incompatibility between its own system and that of Netscape.

b) *The war of online music platforms: the stakes of DRM*

Digital Rights Management systems are anti-copying systems associated with online music download platforms (i Tunes, Virgin Mega, Sony Music, AOL Music, etc.). A relatively recent arrival on the technological scene, DRM has been structuring a new market in the legal music downloading over the last two years. It is the music industry majors' response to the problem of illegal downloading, an attempt to make up for the financial loss caused by pirating. This protection minimises the risks of music file sharing. The platforms provide producers with a certain "traceability" of the exploitation of their catalogues.
These DRMs are the subject of a standards war which has currently taken the form of incompatibility between the different systems, with each system being protected by intellectual property rights. Today, each platform is associated with a particular DRM, and an internaut who buys music on a given platform can only listen to it on the music player "associated" with that platform (iPod and iTunes from Apple; mp3 from Sony with Sony Music) and not on any other. The music industry, on the back of the computing industry which delivers the systems, is creating an environment of incompatibility for the consumer. In practical terms, Apple has the most closed proprietary strategy: Apple refuses to grant licenses for its DRM technology (Fairplay) to other music distributors and music player manufacturers (except under very restrictive conditions). So the owners of Apple machines are not free to go over to rivals, and the company has been accused of blocking the market.
Apple's challengers, on the other hand, have more open strategies in their licensing policies, with the avowed aim of taking market share from Apple. Microsoft is aiming to diffuse its system as widely as possible and to supplant Apple in the standards war, while Real Network, with its Harmony DRM, is seeking to increase compatibility between the different systems. This situation is not to everyone's taste, and certain initiatives that have been undertaken demonstrate the pressing desire to bring an end to system incompatibility. This was the aim of the Coral consortium, which brought together some of the industry majors[16] and aimed to render DRM systems compatible with each other. The members of Coral have now joined the Marlin Joint Development Association,[17] which seeks the creation of a common DRM standard (the first version of which is planned in an open-source format). Today, it seems

[15] Producing Beta versions, as well as a commercial version offering a free 90-day trial period.
[16] HP, Sony, Philips, Samsung, Matsuhita, Intertrust, 20th Century Fox): note that neither Apple nor Microsoft were members of the consortium.
[17] Intertrust, Matsushita, Philips, Sony and Samsung.

clear that the players involved have divergent standpoints: if we draw on Besen and Saloner's analysis (1989), crossing the individual interest in promoting one's own standard and the collective interest in having a universal standard, Apple and Microsoft are the two protagonists in a situation of conflict (high individual interest and high interest in establishing a unique standard), while the others in the industry are pushing for a solution of coordination, in which the desire to establish a compatible standard prevails over individual interests. Apple and Microsoft are in the situation described by Besen and Farrell (1994) in their "Tweedledum and Tweedledee" game, where each is trying to impose his own standard. The strategies adopted by the two companies with regard to DRM are consistent with the authors' list of strategies used to win the standards war: (i) building a large customer base as soon as possible; (ii) attracting suppliers of complementary products; (iii) using product pre-announcement as a means of attracting consumers; (iv) making long-term price commitments. At present, the outcome of this struggle is uncertain, bearing in mind the fact that several configurations are possible: (i) non-standardisation, as happened in the video games sector; (ii) the success of one sole proprietary system; (iii) an ad hoc solution arising out of collaboration.

2.2) Towards the more offensive use of patents

The opening of the door to software patents twenty years ago, and to business methods more recently, raises several questions.

a) In terms of innovation.

The software industry is a sequential activity characterised by successive, complementary innovations (Bessen and Maskin, 2000; Merges and Nelson, 1994). Like the telecommunications or semiconductor industries, this is a cumulative activity in which previous innovations always serve as the foundation for subsequent innovations, rather like a pyramid (Shapiro, 2001). In addition, the increasingly important role of software in the technologies of a growing number of sectors means that applications are incredibly varied and involve more traditional sectors (the car industry, for example) just as much as high technology sectors. On these grounds, it is reasonable to wonder whether the strengthening of the protection of software may have deleterious effects on the rate of innovation. Today, it is almost impossible for a software editor or programmer not to encroach on what has already been produced: software is like a set of Russian dolls, in which each system fits into another. If part of the system is protected by patent, the risk is that this may slow down or even paralyse innovation. We have only to refer to the literature developed by Scotchmer (1991), who analysed the relations between basic innovation and second generation innovation. The protection conditions of the basic patent (in terms of scope, claim, etc.) have an important influence on the incentives of future innovators to invest in R&D.

Certain economists have echoed these concerns. Shapiro (2001), for example, highlights the fact that the current American patent system generates relatively perverse effects on innovation and raises barriers to the entry of new players, blocking the construction of the famous R&D pyramid with a "patent thicket".

Under these circumstances, the question facing Europeans is whether their refusal to patent business methods on the one hand, and their recent back-tracking on software patents on the other, will have an unfavourable impact on firms' competitiveness (Liotard, 2004). At the present time, we are still in the realm of questions: how can a European firm be competitive vis-a-vis an American rival which, thanks to its patents, can not only prevent the European firm from penetrating the U.S., but also directly challenge it on its own territory? This situation could be prejudicial to European companies, by increasing their costs. How can we

resolve the juridical imbroglio of the internet, a global system par excellence, whose Web functions and develops within territorial legal systems? Clearly, the problems just keep on arising, and the task facing the European authorities today is to take all these elements into consideration in a profound investigation of the matter.

b) The equilibrium of terror: the use of legal proceedings

Because of this multitude of patents, the number of lawsuits and license agreements required to resolve these conflicts has risen disproportionately, even opposing small and large companies[18]. Under these circumstances, the concerns about the software sector are serious, all the more so since its involvement in and relations with the domain of the internet and e-business are becoming ever denser. The principal fear today concerns the effects of software and business methods patentability on the development of the Web and the possible strategies of players that are beginning to appear: the growing number of lawsuits for infringement of software patents in the United States is an indicator of new trends and of attempts to block awkward rivals[19]. Litigations over industrial property grew three times as fast as civil cases in the United States between 1993 and 2002 (FTI Intellectual Property 2003).

These multiple lawsuits have been excessively costly for business: the cost a lawsuit for one single patent has been estimated at 1.2 million dollars[20]. The direct consequence of this is that small firms have great difficulty in defying larger firms on this terrain, where the larger firms have been likened to a "small mafia of monopoly holders" (Gleick 2000). In addition, the big firms now pull even more weight on the technological scene, thanks to their patent portfolios and licensing practices (in all forms: simple, crossed, patent pools). So in the United States, the income generated by license agreements grew from 15 billion dollars in 1990 to 100 billion in 1998 and 130 billion in 2000. IBM alone generates 1.6 billion dollars in licenses.

However, these observations on litigation need to be qualified. Given the very high cost of lawsuits (especially during what is called the "discovery" phase in the United States), very few disputes get taken as far as court action, as the parties involved negotiate well before this: about 80% of disputes are settled out of court, by means of license agreements. These data corroborate the idea that lawsuits are a real corporate weapon, seen by firms as a strategic tool for achieving their objectives, without necessarily going as far as a court decision at the end of a long and costly process. For certain firms, this can represent a means of driving their rivals into a corner, obliging them either to issue or to pay for licenses under the threat of pursuing the legal proceedings. In the case of lawsuits involving patents on business methods, the most important disputes have all been resolved by license agreements before the end of the court action.

So a portfolio of patents on software or business methods puts the holder in a strong position as regards the negotiation of licenses, resulting in a sort of "reign of terror" where competitors are constantly under the threat of lawsuits. The high number of disputes involving financial patents after 1998 bears witness to this (Lytle and Signore, 2004): the vast majority of cases involving players in the spheres of finance or insurance have resulted in victory for the patent holders, who can, thanks to legal action, bring an end to their competitors' activities, obtain damages, receive license fees, sign crossed license agreements or defend themselves against other holders. Because the patentability of business methods is a relatively recent phenomenon, it is still difficult to give a definitive opinion on the effects this sort of

[18] For example, the lawsuit between Intertrust Technologies and Microsoft over patents held by the former and which were alleged to have been used by the latter for the Windows Media system (Shapiro 2001).

[19] Amazon.com vs Barnes&Noble, Priceline v Expedia: see the synthetic table proposed by Hall (2003) for examples of lawsuits.

[20] The AIPLA Economic Report (2001) estimates that for each of the parties involved in a lawsuit, the average cost rose from 400,000$ in 1999 to nearly 500,000$ in 2001.

protection is having on the nature and rate of innovation. Still, we can put forward certain hypotheses: it is clear that we are witnessing a proliferation in such patents, and the number of lawsuits is growing as a consequence, increasing the overall costs of the system. It is reasonable to believe that, as has been observed in other industries, these patents are a vector for capturing rents through license agreements, as well as a means of obtaining their financing, particularly through venture capital.

Conclusion

On the strength of these observations, it is clear that intellectual property constitutes a weapon in the hands of economic players, a weapon used to take position in a market, to impose a standard (or to wage war against other technological solutions) and even to hinder other competitors. Henceforth, certain questions call for analysis in future research: (i) will the strategic use of patents or copyright have an effect in the future on the development of the internet, which is still considered a domain with relatively weak barriers to entry? In this "age of access" (Rifkin, 2000), just how far can one go in the use of intellectual property? (ii) Should the tools provided by competition law be used as they are, or should they be adapted to correct certain criminal tendencies involving intellectual property? We have recently witnessed *ex post facto* attempts to use patents to carry out technological "hold ups" (such as the case of the GIF image compression format): should internet-related markets be the object of special treatment by the competition authorities or not?

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